Fujitsu Value Proposition for Manufacturing Industry

#EnablingDigital with Fujitsu Connected Enterprise
Business Challenges

Manufacturing Operations

- Reduced inventory
- Reduced lead-time
- Minimized production downtime
- Automation
- Cost / Sourcing control
- Workforce safety

Improved Sales & Operations
- Differentiation / Shorten Time-to-Market
- Transform / expand Product to Service
- New Sales Channels / B2B and B2C
- Brand
- Extended revenue stream

Services After Sales
- Preventive maintenance
- Control of Installed Base

Delivery

- Optimize outbound delivery

Production

- Shorter Time to Market
- Product Lifecycle Management / Resource & Development

Sales

- Improved Sales & Operations

Digital disruption
- Globalization
- Urbanization
- Sustainability

Optimized outbound delivery
Digital means different things to different people

Size and market impact of IIoT

- **Impact on global economy by 2020**
  - $110bn (Morgan Stanley, 2015)
  - $123bn (IndustryARC, 2016)

- **Impact on global economy by 2030**
  - $14.2tn
  - 7.3% CAGR

Disruptive - Re-inventing business models

Transforming user experience

Digitising existing business

New supplier ecosystems
Tokyo and Fukuoka, Japan, November 28, 2016

- Fujitsu Limited and Fujitsu Kyushu Systems Limited today announced the establishment of a new company, **Fujitsu Greenhouse Technology Finland Oy**, to operate a plant factory equipped with an agricultural Information and Communication Technology (ICT) system, and to produce and sell agricultural products. The new company, jointly financed by Robbe's Little Garden Ltd, commenced operations on November 17.

- Fujitsu Greenhouse Technology Finland, which will begin full-scale production in the first half of fiscal 2017, uses a plant factory equipped with the latest technologies, including the **FUJITSU Intelligent Society Solution "Akisai" Food and Agriculture Cloud**, along with fully artificial lighting using LEDs, multi-tier growing trays, and full automation.

Minute control over nutrients
Optimal light levels and wavelengths
No pollution nor pests
Chemical-free production
Higher crop yields
Accurate harvest schedules
Industry initiatives

Industrie 4.0 – factory creates value
Industrial Internet Consortium – data creates value
Industrial Value Chain Initiative – human knowledge creates value
FUJITSU is a member of IIC, founded 2014 by 10 US companies, leads the testbed on “factory operations visibility & intelligence”, and is in 9 member steering committee.

- The Factory Operations Visibility & Intelligence (FOVI) Testbed makes it possible to simulate a factory environment in order to visualize results that can then be used to determine how the process can be optimized.

- Industrial Internet Security Framework was published by IIC team Sep 2016. Fujitsu security consultants were part of the team.
Industrie 4.0 – 4th Industrial revolution

Stakeholder group "Plattform Industrie 4.0" consists about 70 members, 50 of which are industrial companies. Companies are individually selected and become members by invitation only. FUJITSU has been a member since last June.

- Industrie 4.0 is the extension of industrial digitalization to the Internet of Things (IoT) in manufacturing
- Industrie 4.0 constitutes an evolution and an integration into IoT of previously separate IT-application areas in automation (MES, PLC) and administration (ERP, SCM) – today, such concepts are often called Industrie 3.0 (3rd industrial revolution, since 1970)
Comprehensive framework for digital transformation

MetaArc - Digital Business Platform

Hyperconnected API Economy

Value Creation

Existing Business

Digital Business

Industry specific services

Mobile  IoT  Analytics  AI  Security

K5 / Hybrid Cloud

How can MetaArc & Hybrid IT help Manufacturing companies as Digital Enablers?

Example:
Connecting Food Industry Ecosystem
Customer Case: Optex - In Global Sensors

- This ground-breaking system uses the Cloud IoT service to obtain water analysis results in real-time, enabling Optex to create new data-driven services for its industrial customers.

- Platform utilized for trials, in China, collecting data from mobile water quality measurement sensors
  - Full production solution now offered to Optex customers

- Platform enables:
  - Stable processing of ‘Big Data’ in real time
  - Applications for using IoT

Optex manufactures world-class sensing equipment in the fields of automatic doors, security and measurement, among others.
Application services for Manufacturing industry

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Customer Issues

- Digitalise existing processes
- Redesign of business

Transformation

- Process Automation RunMyProcess
- Salesforce ServiceNow
- AR & Wearables
- IOT: GlobeRanger & EPP
- Artificial Intelligence
- Business Intelligence & Smart Analytics
- Application Modernization
- Application Development & Integration Services

Productivity

- Mastering Productivity
- Enterprise Content Management
- RPA
- Case & Doc Mgmt
- Transformational Application Managed Services

De-risking

- Consolidation & Cloud Services for Oracle, SAP, MS
- Digital Performance Management
- Fujitsu Enterprise Postgres DB
- UShareSoft
- Oracle

Partners

- Symfonii
- Fujitsu
- Microsoft
- ServiceNow
- RunMyProcess
- GlobeRanger
- Artificial Intelligence
Digital Transformation: “The Connected Enterprise”

- Leverages the convergence of **Information Technology** and **Operational Technology** to enable smart, connected operations and significantly improve operations effectiveness and reduce operating cost.
The seamless integration between Information Technology & Operational Technology is the key for successful Connected Enterprise implementation.

**IT**
- Query Based
- Data at Rest
- Non-real time

**OT**
- Event Based
- Data in Motion
- Real Time

IoT World Forum Reference Model

- 1. Physical Devices & Controllers
- 2. Connectivity
- 3. Edge Computing
- 4. Data Accumulation
- 5. Data Abstraction
- 6. Application
- 7. Collaboration & Processes
The Fujitsu Connected Enterprise

Preconfigured connectivity

Connected Assets
- Asset Tracking & Visibility
- Predictive Maintenance and Service

Connected Manufacturing
- Industrial Operational Excellence
- Manufacturing Analytics & Performance Management

FJ Business Process Platform

Ot

FJ Edgeware IoT Platform
FJ Event Processing Platform

3rd party M2M

FJ Ubiquitousware

IT Systems

Security
- Simplified Work Management
- Health & Safety
- Quality Inspection & Control

Operational Effectiveness
- Asset Reliability
- O&M Cost
- Operational Risk

Connected Workers

IT

Ubiquitousware

Edgeware

IoT Platform

Business Process Platform

IT Systems

Preconfigured connectivity
Increasing operational excellence and competitive advantage

Connected Assets
Connecting assets to deliver accurate and timely information that enables better decision making.

Connected Intelligence
Large quantities of information enables new insights that extend the life of the asset and reduce the total cost of ownership.

Connected Workforce
Providing the workforce the means to access the information they need to be more effective.
What does it mean for Manufacturing Operations?

Business Networks (Aka, AIN) and System of Records
- ERP
- EAM
- SCM
- QM
- CRM

Machine Data (Industrial M2M)
Material Movements (RFID)
Asset & Worker data (location, safety, human wearables)

Business Data

Plant/Fied

Transforming your manufacturing operations and asset management for better business outcomes
When subcontractors enter a restricted area, the security staff gets a message.

Monitor and report on environmental conditions: temperature, humidity, noise, lightning, ...

Automated recording of associated location-based and time-stamped events.

Geofencing zones and proximity zones.

Asset & People tracking/monitoring & management.

Remote equipment management: monitors and records actions, remotely authorizes and controls usage.

Customers and visiting employees, when certain conditions are met, receive useful information when they enter “points of interest”.

“Smart Building”

Connecting physical world events from “people and assets” to business processes.

Connected Assets and Workers
Real time spatial & scalar events and Security

Connecting real time events from people and assets into business processes.
Objective: Process orchestration of the marketing, order fulfilment, scheduling and install service

- Identify target customers for sales campaign
- Present a shopping catalogue for individual customer
- Identify slots for install and auto despatch engine based on stock levels and geo
- View job lists and install on customer base
- Evaluate success of campaign and abandoned baskets etc
- View stats on installed sensors in real time and raise events automatically on failure

Campaign Initiated → Order Submitted → Field Engineer Scheduling → Field Engineer Installed → Campaign ROI → Post Sales Monitoring
Intelligent Dashboard for global manufacturing operations

Management dashboard with business and operational data.

Data from plant ops

Data from bus. apps

Factory dashboard

Operational view of all production lines.

Data from shop floor

Equipment per production line.

Data from order system

Single equipment status, "digital" data sensors.

Data from

machine sensors

Data from

order system

Full transparency from single sensor level to global business level.
Design/simulation tools and database are sophisticatedly connected for electrical/mechanical product design verification.

Physical phenomena can be more accurately captured by simulations for electrical and mechanical designs using billions of meshing.

Customer Evaluation:
1. Timely and secure access to E-Cloud design infrastructure among multiple design locations.
2. Capable of product design review among multiple design locations.
3. No high-performance WS necessary for 3D/CAD design data application and minimize computing facility management cost.
Connected Asset: Real-Time Supply Chain Visibility

- Up to 80% inventory write-off reduction by end of 2018
- 30% reduction in 2016
- Average seek time for critical components is down from 2 days to 1 hour
Real time visibility into the velocity of the manufacturing process

Full electronic accountability of raw material life cycle
Proactive Maintenance with Augmented Reality.

Replaced paper and manual processes which were quickly outdated or required extensive training.

Operators can work more quickly and accurately with real-time onsite access to data and central support.
Finished goods handling from manufacture through cold storage & shipping: improved shipping accuracy

Truck loading time reduced from 60 minutes to 20 minutes
Nordic monitoring and control of projects

- Fujitsu has delivered applications for project management since 1994, for the NCC Corporation.
- Today, NCC uses C7 in Sweden, Norway, Finland and Denmark.

Advantages and benefits NCC achieved
- Consistent approach
- Reduced administration
- Monitoring and control of projects
- Information management and benchmarking
Getting started - on Digital Journey

"Think big, start small; learn fast and scale quickly"

Executive Workshop
- Focussed session – up to 2 hours
- Interventions- e.g. trends, art of the possible, threats & opportunities
- Outcome – common understanding, sponsorship & agreed priorities

Digital Innovation Session
- In-depth session – up to half a day
- Interventions – e.g. facilitated discussion, demonstrations, concept jam
- Outcome – identified opportunities for solutions

Digital Vision and Roadmap
- Develop consistent strategy for digital – up to 4 weeks
- Interventions – e.g. visioning workshop, road-mapping
- Outcome – agreed approach, outcomes, initiatives and milestones

Proof of Concept and Value
- Real-life application of digital – up to 3 months
- Interventions – e.g. day in the life, hackathon, agile solutions integration
- Outcome – business case for the solution
Why Fujitsu?

- Framework and method to help customers drive yield from the Digital Transformation
- Lean tools help our customers rethink current supply chain and reduce costs and risks
- Innovation driven company with smart solutions like *GlobeRanger, RunMyProcess* and *UBIQUITOUSWARE*
- End-to-end service – from business process to applications and infrastructure layer, such as *MetaArc – Digital Business Platform*
- Fujitsu being a long term global partner with strong Nordic presence
- **Fujitsu is also Manufacturer**

Transforming your manufacturing operations and asset management for better business outcomes
Additional material

Make Industrial IoT happen with Fujitsu Connected Enterprise

https://www.youtube.com/watch?v=XX-Bq7knB6E

RFID based MES/WIP demo

https://www.youtube.com/watch?v=fBDZ5mN_qMk

Fujitsu Virtual Factory

https://www.youtube.com/watch?v=V8obZ0s_1IK#t=62

Warehouse tracking

https://vzaar.com/videos/7299544

The Workplace of the future, created with Augmented Reality

https://www.youtube.com/watch?v=iqaplCs2lxG0&list=PLv3dNrfbuNATBt75hh13qm7Lql21zk7_Y

Intelligent Dashboard

https://www.youtube.com/watch?v=o1AIJGuJ8_s

Fujitsu’s Integrated End-to-End IoT Solutions Gain Momentum


More information: Reijo Sihvonen, +358 400 433 407; reijo.sihvonen@fi.fujitsu.com